

Appendix A

Guidance for Installing R, R Studio, JAGS, and rjags

Create a folder in a writeable directory (e.g. C:\Bayesian), and install all the programs (R, RStudio, JAGS) into this folder following the steps below.

A.1 Install R

The following are the steps to install the programming language R.

- 1.1 Go to website <https://www.r-project.org>.
- 1.2 To download R, choose a CRAN mirror at webpage <https://cran.r-project.org/mirrors.html>.
e.g. click the first link under category USA, which is <https://cran.cnr.berkeley.edu>. This leads you to the page to download and install R.
Follow the instructions, e.g. for Windows users, select *Download R for Windows*.
On the following page, R for Windows, select *Install R for the first time*.
On the following page, select *Download R x.x.x (version number) for Windows*.
- 1.3 Run the R installation program to install R. When asked to Select Destination Location, select the folder created earlier, e.g. C:\Bayesian\R-3.3.0,
and follow the installation instructions.

A.2 Install R Studio

The following are the steps to install the R Studio editor, which provides a friendly graphical user interface for R programming.

- 2.1 Go to the R Studio website <https://www.rstudio.com> and select *Download RStudio*.
- 2.2 Select *Download RStudio Desktop*.
- 2.3 On the following page, select the appropriate program for your platform, e.g. *RStudio x.x.xxx – Windows Vista/7/8/10*.
- 2.4 Run the RStudio installation program to install RStudio. When asked to Choose Install Location, select the folder created earlier, e.g. C:\Bayesian\Rstudio,
and follow the installation instructions.

A.3 Install JAGS

The following are the steps to install the Bayesian sampling program JAGS.

- 3.1 Go to website <http://mcmc-jags.sourceforge.net> for instructions. To download the JAGS installation program (*JAGS -x.x.x.exe*), visit the webpage <https://sourceforge.net/projects/mcmc-jags/files>.
- 3.2 Run the JAGS installation program to install JAGS. When asked to Choose Install Location, select the folder created earlier, e.g. C:\Bayesian\JAGS-4.2.0, and follow the installation instructions.

A.4 Install Package rjags

The following are the steps to install R package rjags (to let R talk to JAGS). There are two ways to do this:

- 1) In the RStudio menu bar at the top of the screen, select *Tools* → *Install Packages*, then type `rjags` under Packages
or
- 2) In the R Studio console window, type `install.packages("rjags")`.

A.5 Set Working Directory

The working directory is a default location for files to be read from or written to. Use R command `getwd()` to find your current working directory. There are two ways to set the working directory in RStudio:

- 1) In the RStudio menu bar at the top of the screen, select *Session* → *Set Working Directory* → *Choose Directory...* (e.g. chose C:\Bayesian as the working directory)
or
- 2) In the R Studio console window, use command `setwd`, for example `setwd("C:/Bayesian")`.

Note: Before running the R scripts in this book, please save all the data files (.txt files), JAGS files, and .R files in the working directory.